

Claims

1. A device for blow-forming containers of a thermoplastic material that has a heater unit for temperature treating preforms and at least one blow station equipped with mould supports that can be positioned relative to one another and wherein at least two cavities are located in the area of the blow station whose longitudinal axes have a spacing relative to one another that is larger than a spacing between the preform longitudinal axes of adjacent preforms (1) in the vicinity of the heater unit (2), characterized in that a positioning element (47) that changes the spacing of the preforms (1) relative to one another is located in the area of the blow station (3), and in that a spreader element that likewise modifies the spacing of the preforms (1) is also located between at least one heating element (16) in the area of the heater unit (2) and the blow station (3).

2. A device in accordance with claim 1, characterized in that the spreader element (61) is located in the vicinity of the heater unit (2).

3. A device in accordance with claim 1, characterized in that the spreader element (61) is arranged after the heater unit (2) in the transport direction of the preforms (1).

4. A device in accordance with claim 1, characterized in that the spreader element (61) is embodied as a chainlike deflection of support elements (19) for the preforms (1).

5. A device in accordance with claim 1, characterized in that the spreader element (61) is located in the area of a transfer wheel (25).

6. A device in accordance with claim 5, characterized in that a plurality of spreader elements (61) is located in the area of the transfer wheel (25) and between the heater unit (2) and the blow wheel (12).

7. A device in accordance with claim 1, characterized in that the spreader element (61) has two spreader levers (64, 65) and an actuator (73).

8. A device in accordance with claim 7, characterized in that the spreader element (61) has positioning levers (71, 72) in addition to the spreader levers (64), and in that the positioning levers (71, 72) are pivotably connected to the spreader levers (64, 65) as well as to the actuator (73).

9. A device in accordance with claim 7, characterized in that the actuator (73) has a cam roller that can be acted upon by a mechanical cam control system.

10. A method for blow-forming containers of a thermoplastic material, wherein preforms are temperature-treated and shaped into containers in at least one blow station and wherein moulds to define the container shape are held by mould supports that can be positioned by support arms, and wherein at least two preforms are simultaneously shaped into containers within each blow station and are positioned such that the preforms assume a positioning relative to one another when entering the blow station that differs from the positioning during the blow forming process, characterized in that a spacing of the preforms (1) relative to one another is changed during transport between entry into the blow station (3) and blow positioning, and in that between at least one of the heating elements (16) that heat treats the preforms (1) and the blow station (3), at least one additional change in the spacing of adjacent preforms (1) relative to one another is performed.

11. A method in accordance with claim 10, characterized in that the additional spacing change is performed in the area of the heater unit (2).

12. A method in accordance with claim 10, characterized in that the additional spacing change is performed after the heater unit (2) in the direction of transport.

13. A method in accordance with claim 10, characterized in that the additional spacing change is performed in the area of a transfer wheel.

14. A method in accordance with claim 10, characterized in that a two-step spacing change is performed.

15. A method in accordance with claim 10, characterized in that a three-step spacing change is performed.

16. A method in accordance with claim 14, characterized in that the relative spacing of the preforms (1) is increased at every change of spacing.

17. A device in accordance with claim 4, characterized in that the spreader element (61) has two spreader levers (64, 65) and an actuator (73).

18. A method in accordance with claim 17, characterized in that the spreader element (61) has positioning levers (71, 72) in addition to the spreader levers (64), and in that the positioning levers (71, 72) are pivotably connected to the spreader levers (64, 65) as well as to the actuator (73).

19. A method in accordance with claim 18, characterized in that the actuator (73) has a cam roller that can be acted upon by a mechanical cam control system.

20. A method in accordance with claim 15, characterized in that the relative spacing of the preforms (1) is increased at every change of spacing.